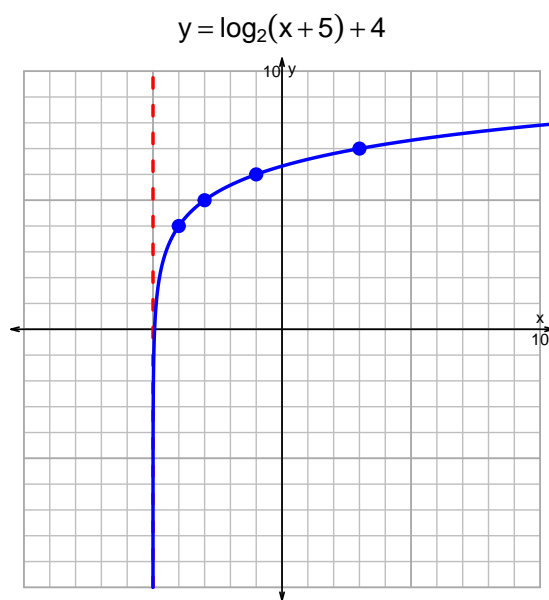
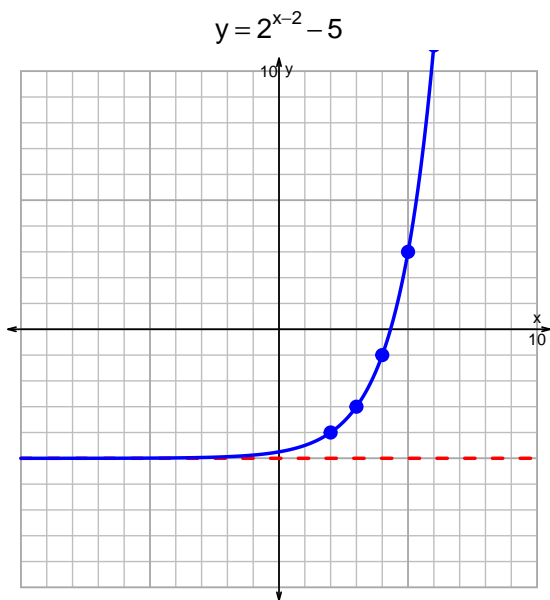


Name: _____

Date: _____

s18: EXP LOG (SLTN v324)

1. (10 pts) Graph $y = 2^{x-2} - 5$ and $y = \log_2(x+5) + 4$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-11 = \left(\frac{-4}{3}\right) \cdot 2^{5t/7}$$

Divide both sides by $\frac{-4}{3}$.

$$\frac{11 \cdot 3}{4} = 2^{5t/7}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{11 \cdot 3}{4}\right) = \frac{5t}{7}$$

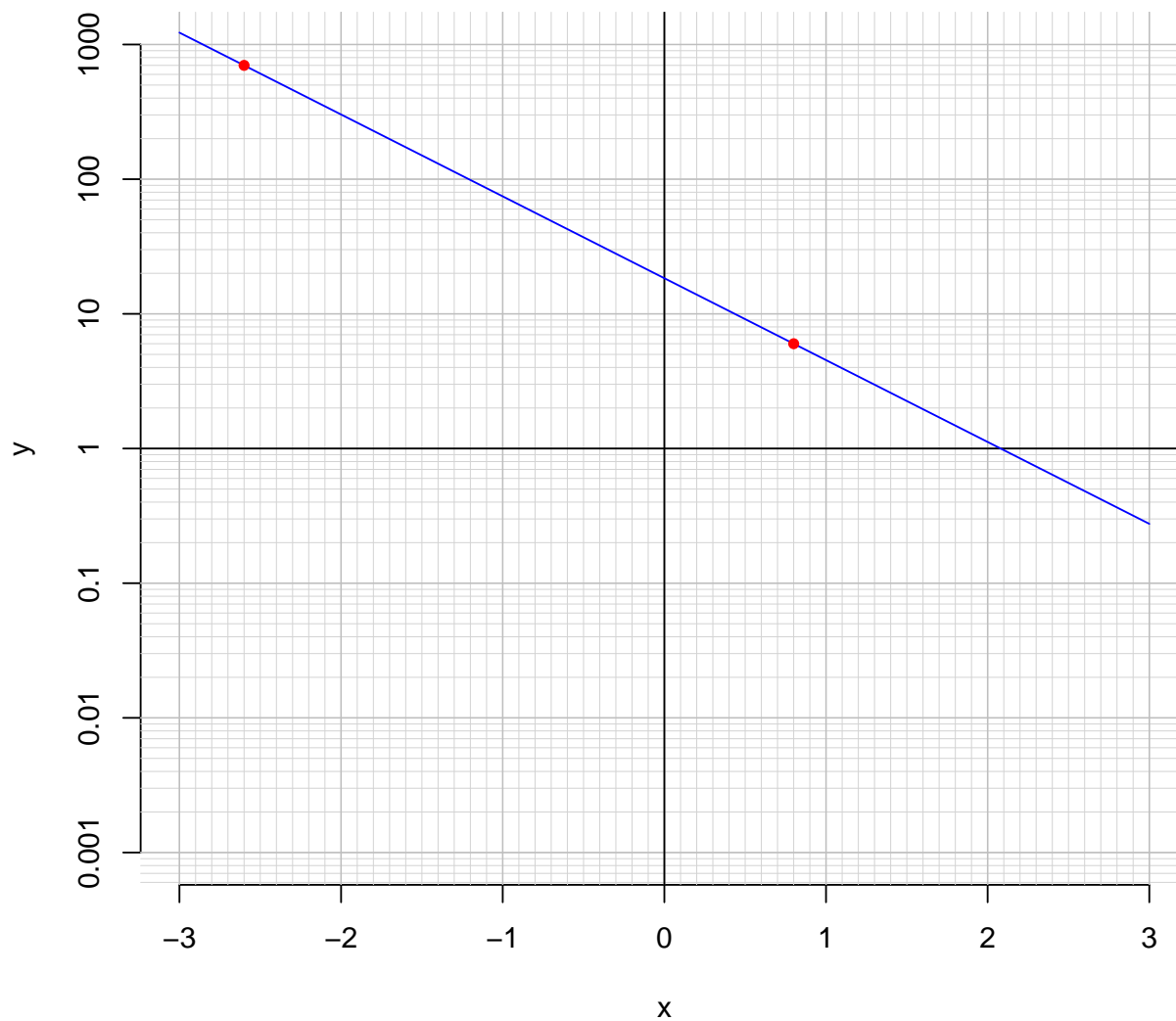
Divide both sides by $\frac{5}{7}$.

$$\frac{7}{5} \cdot \log_2\left(\frac{11 \cdot 3}{4}\right) = t$$

Switch sides.

$$t = \frac{7}{5} \cdot \log_2\left(\frac{11 \cdot 3}{4}\right)$$

3. (10 pts) An exponential function $f(x) = 18.4 \cdot e^{-1.4x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(-2.6)$.

$$f(-2.6) = 700$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{-1}{1.4} \cdot \ln\left(\frac{x}{18.4}\right)$$

Using the plot above, evaluate $f^{-1}(6)$.

$$f^{-1}(6) = 0.8$$